SEQUENCE LISTING

(1) GENERAL INFORMATION:

(i) APPLICANTS: Peter W. Laird, Cindy A. Eads and Kathleen D. Danenberg

(ii) TITLE OF INVENTION: **PROCESS FOR HIGH THROUGHPUT DNA METHYLATION ANALYSIS**

(iii) NUMBER OF SEQUENCES: 54

(iv) CORRESPONDENCE ADDRESS:

(A) ADDRESSEE: Davis Wright Tremaine LLP

(B) STREET: 1501 Fourth Avenue
2600 Century Square

(C) CITY: Seattle

(D) STATE: Washington

(E) COUNTRY: USA

(F) ZIP: 98101-1688

(v) COMPUTER READABLE FORM:

(A) MEDIUM TYPE: Diskette-3.5 inch, 1.44 MB storage

(B) COMPUTER: PC compatible

(C) OPERATING SYSTEM: Windows 95

(D) SOFTWARE: Word 97

(vi) CURRENT APPLICATION DATA:

(A) APPLICATION NUMBER:

(B) FILING DATE:

(C) CLASSIFICATION:

(vii) PRIOR APPLICATION DATA: N/A

(A) APPLICATION NUMBER: N/A

(B) FILING DATE: N/A

(viii) ATTORNEY/AGENT INFORMATION:

(A) NAME: Jeffrey B. Oster

(B) REGISTRATION NUMBER: 32,585

(C) REFERENCE/DOCKET NUMBER: 47675-9

(xi) TELECOMMUNICATION INFORMATION:

(A) TELEPHONE: (206) 628-7711

(B) TELEFAX: (206) 628-7699

(2) INFORMATION FOR SEQ ID NO:1:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 19 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA

(iii) HYPOTHETICAL: No

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1:

GGCGTTCGTT TTGGGATTG 19

(2) INFORMATION FOR SEQ ID NO:2:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 24 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear
(ii) MOLECULE TYPE: DNA
(iii) HYPOTHETICAL: No
(ix) FEATURE:
((A) NAME/KEY: 5′ substitution with fluorescent reporter dye 6FAM (2,7-dimethoxy-4,5-dichloro-6-carboxy-fluorescein-phosporamidite-cytosine); 3′substitution with quencher dye TAMRA (6-carboxytetramethylrhodamine).
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:2:

CGATAAAACC GAACGACCCG ACGA 24

(2) INFORMATION FOR SEQ ID NO:3:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 19 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear
(ii) MOLECULE TYPE: DNA
(iii) HYPOTHETICAL: No
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:3:

GCCGACACGC GAACTCTAA 19

(2) INFORMATION FOR SEQ ID NO:4:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 23 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(d) TOPOLOGY: linear
(ii) MOLECULE TYPE: DNA
(iii) HYPOTHETICAL: No
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:4:

ACACATATCC CACCAACACA CAA 23

(2) INFORMATION FOR SEQ ID NO:5:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 30 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single

(D) TOPOLOGY: linear
(ii) MOLECULE TYPE: DNA
(iii) HYPOTHETICAL: No
(ix) FEATURE:
(A) NAME/KEY: 5′ substitution with fluorescent reporter dye 6FAM (2,7-dimethoxy-4,5-dichloro-6-carboxy-fluorescein-phosporamidite-cytosine); 3′substitution with quencher dye TAMRA (6-carboxytetramethylrhodamine).
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:5:

CAACCCTACC CCAAAAACCT ACAAATCCAA 30

(2) INFORMATION FOR SEQ ID NO:6:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 21 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear
(ii) MOLECULE TYPE: DNA
(iii) HYPOTHETICAL: No
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:6:

AGGAGTTGGT GGAGGGTGTT T 21

(2) INFORMATION FOR SEQ ID NO:7:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 18 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear
(ii) MOLECULE TYPE: DNA
(iii) HYPOTHETICAL: No
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:7:

CTATCGCCGC CTCATCGT 18

(2) INFORMATION FOR SEQ ID NO:8:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 22 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear
(ii) MOLECULE TYPE: DNA
(iii) HYPOTHETICAL: No
(ix) FEATURE:
(A) NAME/KEY: 5′ substitution with fluorescent reporter dye 6FAM (2,7-dimethoxy-4,5-dichloro-6-carboxy-fluorescein-phosporamidite-cytosine); 3′substitution with

quencher dye TAMRA (6-carboxytetramethylrhodamine).

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:8:

CGCGACGTCA AACGCCACTA CG 22

(2) INFORMATION FOR SEQ ID NO:9:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 30 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear
(ii) MOLECULE TYPE: DNA
(iii) HYPOTHETICAL: No
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:9:

CGTTATATAT CGTTCGTAGT ATTCGTGTTT 30

(2) INFORMATION FOR SEQ ID NO:10:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 27 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear
(ii) MOLECULE TYPE: DNA
(iii) HYPOTHETICAL: No
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:10:

TTATATGTCG GTTACGTGCG TTTATAT 27

(2) INFORMATION FOR SEQ ID NO:11:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 22 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear
(ii) MOLECULE TYPE: DNA
(iii) HYPOTHETICAL: No
(ix) FEATURE:
(A) NAME/KEY: 5′ substitution with fluorescent reporter dye 6FAM (2,7-dimethoxy-4,5-dichloro-6-carboxy-fluorescein-phosporamidite-cytosine); 3′substitution with quencher dye TAMRA (6-carboxytetramethylrhodamine).
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:11:

CCCGTCGAAA ACCCGCCGAT TA 22

(2) INFORMATION FOR SEQ ID NO:12:
(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 19 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear
(ii) MOLECULE TYPE: DNA
(iii) HYPOTHETICAL: No
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:12:

GAACCAAAAC GCTCCCCAT 19

(2) INFORMATION FOR SEQ ID NO:13:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 25 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear
(ii) MOLECULE TYPE: DNA
(iii) HYPOTHETICAL: No
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:13:

GGGTTGTGAG GGTATATTTT TGAGG 25

(2) INFORMATION FOR SEQ ID NO:14:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 28 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear
(ii) MOLECULE TYPE: DNA
(iii) HYPOTHETICAL: No
(ix) FEATURE:
(A) NAME/KEY: 5′ substitution with fluorescent reporter dye 6FAM (2,7-dimethoxy-4,5-dichloro-6-carboxy-fluorescein-phosporamidite-cytosine); 3′substitution with quencher dye TAMRA (6-carboxytetramethylrhodamine).
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:14:

CCCACCCAAC CACACAACCT ACCTAACC 28

(2) INFORMATION FOR SEQ ID NO:15:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 22 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear
(ii) MOLECULE TYPE: DNA
(iii) HYPOTHETICAL: No
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:15:

CCAACCCACA CTCCACAATA AA 22

(2) INFORMATION FOR SEQ ID NO:16:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 19 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear
(ii) MOLECULE TYPE: DNA
(iii) HYPOTHETICAL: No
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:16:

AACAACGTCC GCACCTCCT 19

(2) INFORMATION FOR SEQ ID NO:17:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 18 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear
(ii) MOLECULE TYPE: DNA
(iii) HYPOTHETICAL: No
(ix) FEATURE:
(A) NAME/KEY: 5′ substitution with fluorescent reporter dye 6FAM (2,7-dimethoxy-4,5-dichloro-6-carboxy-fluorescein-phosporamidite-cytosine); 3′substitution with quencher dye TAMRA (6-carboxytetramethylrhodamine).
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:17:

ACCCGACCCC GAACCGCG 18

(2) INFORMATION FOR SEQ ID NO:18:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 22 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear
(ii) MOLECULE TYPE: DNA
(iii) HYPOTHETICAL: No
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:18

TGGAATTTTC GGTTGATTGG TT 22

(2) INFORMATION FOR SEQ ID NO:19:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 24 base pairs
(B) TYPE: nucleic acid

(C) STRANDEDNESS: single
(D) TOPOLOGY: linear
(ii) MOLECULE TYPE: DNA
(iii) HYPOTHETICAL: No
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:19:

CAACCAATCA ACCAAAAATT CCAT 24

(2) INFORMATION FOR SEQ ID NO:20
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 28 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear
(ii) MOLECULE TYPE: DNA
(iii) HYPOTHETICAL: No
(ix) FEATURE:
(A) NAME/KEY: 5' substitution with fluorescent reporter dye 6FAM (2,7-dimethoxy-4,5-dichloro-6-carboxy-fluorescein-phosporamidite-cytosine); 3'substitution with quencher dye TAMRA (6-carboxytetramethylrhodamine).
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:20:

CCACCACCCA CTATCTACTC TCCCCCTC 28

(2) INFORMATION FOR SEQ ID NO:21:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 22 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear
(ii) MOLECULE TYPE: DNA
(iii) HYPOTHETICAL: No
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:21:

GGTGGATTGT GTGTGTTTGG TG 22

(2) INFORMATION FOR SEQ ID NO:22:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 23 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear
(ii) MOLECULE TYPE: DNA
(iii) HYPOTHETICAL: No
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:22:

CCAACTCCAA ATCCCCTCTC TAT 23

(2) INFORMATION FOR SEQ ID NO:23:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 36 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear
(ii) MOLECULE TYPE: DNA
(iii) HYPOTHETICAL: No
(ix) FEATURE:
(A) NAME/KEY: 5′ substitution with fluorescent reporter dye 6FAM (2,7-dimethoxy-4,5-dichloro-6-carboxy-fluorescein-phosporamidite-cytosine); 3′substitution with quencher dye TAMRA (6-carboxytetramethylrhodamine).
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:23:

TCCCTTCCTA TTCCTAAATC CAACCTAAAT ACCTCC 36

(2) INFORMATION FOR SEQ ID NO:24:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 30 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear
(ii) MOLECULE TYPE: DNA
(iii) HYPOTHETICAL: No
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:24:

TGATTAATTT AGATTGGGTT TAGAGAAGGA 30

(2) INFORMATION FOR SEQ ID NO:25:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 18 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear
(ii) MOLECULE TYPE: DNA
(iii) HYPOTHETICAL: No
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:25:

TGAGCGCGGC TACAGCTT 18

(2) INFORMATION FOR SEQ ID NO:26:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 18 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA
(iii) HYPOTHETICAL: No
(ix) FEATURE:
(A) NAME/KEY: 5′ substitution with fluorescent reporter dye 6FAM (2,7-dimethoxy-4,5-dichloro-6-carboxy-fluorescein-phosporamidite-cytosine); 3′substitution with quencher dye TAMRA (6-carboxytetramethylrhodamine).
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:26:

ACCACCACGG CCGAGCGG 18

(2) INFORMATION FOR SEQ ID NO:27:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 20 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear
(ii) MOLECULE TYPE: DNA
(iii) HYPOTHETICAL: No
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:27:

CCTTAATGTC ACACACGATT 20

(2) INFORMATION FOR SEQ ID NO:28:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 22 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear
(ii) MOLECULE TYPE: DNA
(iii) HYPOTHETICAL: No
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:28:

GTTCTCCGGG AGATGTTGCA TA 22

(2) INFORMATION FOR SEQ ID NO:29:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 22 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear
(ii) MOLECULE TYPE: DNA
(iii) HYPOTHETICAL: No
(ix) FEATURE:
(A) NAME/KEY: 5′ substitution with fluorescent reporter dye 6FAM (2,7-dimethoxy-4,5-dichloro-6-carboxy-fluorescein-phosporamidite-cytosine); 3′substitution with quencher dye TAMRA (6-carboxytetramethylrhodamine).

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:29:

CCTCAGTGGG CCTTGGCACA GC 22

(2) INFORMATION FOR SEQ ID NO:30:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 26 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear
(ii) MOLECULE TYPE: DNA
(iii) HYPOTHETICAL: No
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:30:

TGGTGGTGTT GAGAAGGTAT AACTTG 26

(2) INFORMATION FOR SEQ ID NO:31:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 20 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear
(ii) MOLECULE TYPE: DNA
(iii) HYPOTHETICAL: No
(x) PUBLICATION INFORMATION:
(A) AUTHORS: Parsons, et al
(B) TITLE: Microsatellite Instability and Mutations of the Transforming Growth Factor B Type II Receptor Gene in Colorectal Cancer
(C) JOURNAL: Cancer Res.
(D) VOLUME: 55
(F) PAGES: 5548-5550
(G) DATE: 01-DEC-1995
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:31:

TCGCCTCCAA GAATGTAAGT 20

(2) INFORMATION FOR SEQ ID NO:32:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 21 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear
(ii) MOLECULE TYPE: DNA
(iii) HYPOTHETICAL: No
(x) PUBLICATION INFORMATION:
(A) AUTHORS: Parsons, et al
(B) TITLE: Microsatellite Instability and Mutations

of the Transforming Growth Factor B Type II Receptor Gene in Colorectal Cancer
(C) JOURNAL: Cancer Res.
(D) VOLUME: 55
(F) PAGES: 5548-5550
(G) DATE: 01-DEC-1995
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:32:

TCTGCATTTT AACTATGGCT C 21

(2) INFORMATION FOR SEQ ID NO:33:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 21 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear
(ii) MOLECULE TYPE: DNA
(iii) HYPOTHETICAL: No
(x) PUBLICATION INFORMATION:
(A) AUTHORS: Parsons, et al
(B) TITLE: Microsatellite Instability and Mutations of the Transforming Growth Factor B Type II Receptor Gene in Colorectal Cancer
(C) JOURNAL: Cancer Res.
(D) VOLUME: 55
(F) PAGES: 5548-5550
(G) DATE: 01-DEC-1995
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:33:

TGACTACTTT TGACTTCAGC C 21

(2) INFORMATION FOR SEQ ID NO:34:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 22 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear
(ii) MOLECULE TYPE: DNA
(iii) HYPOTHETICAL: No
(x) PUBLICATION INFORMATION:
(A) AUTHORS: Parsons, et al
(B) TITLE: Microsatellite Instability and Mutations of the Transforming Growth Factor B Type II Receptor Gene in Colorectal Cancer
(C) JOURNAL: Cancer Res.
(D) VOLUME: 55
(F) PAGES: 5548-5550
(G) DATE: 01-DEC-1995

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:34:

AACCATTCAA CATTTTTAAC CC 22

(2) INFORMATION FOR SEQ ID NO:35:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 21 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear
(ii) MOLECULE TYPE: DNA
(iii) HYPOTHETICAL: No
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:35:

TCCTAAAACT ACACTTACTC C 21

(2) INFORMATION FOR SEQ ID NO:36:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 23 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear
(ii) MOLECULE TYPE: DNA
(iii) HYPOTHETICAL: No
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:36:

GGTTATTTGG AAAAAGAGTA TAG 23

(2) INFORMATION FOR SEQ ID NO:37:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 22 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear
(ii) MOLECULE TYPE: DNA
(iii) HYPOTHETICAL: No
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:37:

AGAGAGAAGT AGTTGTGTTA AT 22

(2) INFORMATION FOR SEQ ID NO:38:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 21 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear
(ii) MOLECULE TYPE: DNA
(iii) HYPOTHETICAL: No

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:38:

ACTACACCAA TACAACCACA T 21

(2) INFORMATION FOR SEQ ID NO:39:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 12 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear
(ii) MOLECULE TYPE: DNA
(iii) HYPOTHETICAL: No
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:39:

AAACCAAAAC TC 12

(2) INFORMATION FOR SEQ ID NO:40:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 16 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear
(ii) MOLECULE TYPE: DNA
(iii) HYPOTHETICAL: No
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:40:

CCCACACCCA ACCAAT 16

(2) INFORMATION FOR SEQ ID NO:41:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 23 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear
(ii) MOLECULE TYPE: DNA
(iii) HYPOTHETICAL: No
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:41:

GGAGGTTATA AGAGTAGGGT TAA 23

(2) INFORMATION FOR SEQ ID NO:42:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 24 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear
(ii) MOLECULE TYPE: DNA
(iii) HYPOTHETICAL: No

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:42:

CCAACCAATA AAAACAAAAA TACC 24

(2) INFORMATION FOR SEQ ID NO:43:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 22 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear
(ii) MOLECULE TYPE: DNA
(iii) HYPOTHETICAL: No
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:43:

GTAGGTGGGG AGGAGTTTAG TT 22

(2) INFORMATION FOR SEQ ID NO:44:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 23 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear
(ii) MOLECULE TYPE: DNA
(iii) HYPOTHETICAL: No
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:44:

TCTAATAACC AACCAACCCC TCC 23

(2) INFORMATION FOR SEQ ID NO:45:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 27 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear
(ii) MOLECULE TYPE: DNA
(iii) HYPOTHETICAL: No
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:45:

TTGTATTATT TTGTTTTTTT TGGTAGG 27

(2) INFORMATION FOR SEQ ID NO:46:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 26 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear
(ii) MOLECULE TYPE: DNA
(iii) HYPOTHETICAL: No

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:46:

CAACTTCTCA AATCATCAAT CCTCAC 26

(2) INFORMATION FOR SEQ ID NO:47:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 21 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear
(ii) MOLECULE TYPE: DNA
(iii) HYPOTHETICAL: No
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:47:

TTTAGTAGAG GTATATAAGT T 21

(2) INFORMATION FOR SEQ ID NO:48:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 26 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear
(ii) MOLECULE TYPE: DNA
(iii) HYPOTHETICAL: No
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:48:

TAAGGGGAGA GGAGGAGTTT GAGAAG 26

(2) INFORMATION FOR SEQ ID NO:49:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 15 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear
(ii) MOLECULE TYPE: DNA
(iii) HYPOTHETICAL: No
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:49:

TTTGAGGGAT AGGGT 15

(2) INFORMATION FOR SEQ ID NO:50:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 18 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear
(ii) MOLECULE TYPE: DNA
(iii) HYPOTHETICAL: No

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:50:

TTTTAGGGGT GTTATATT 18

(2) INFORMATION FOR SEQ ID NO:51:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 21 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear
(ii) MOLECULE TYPE: DNA
(iii) HYPOTHETICAL: No
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:51:

TTTTTTTGTT TGGAAAGATA T 21

(2) INFORMATION FOR SEQ ID NO:52:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 16 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear
(ii) MOLECULE TYPE: DNA
(iii) HYPOTHETICAL: No
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:52:

GTTGGTGGTG TTGTAT 16

(2) INFORMATION FOR SEQ ID NO:53:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 19 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear
(ii) MOLECULE TYPE: DNA
(iii) HYPOTHETICAL: No
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:53:

AGGTTATGAT GATGGGTAG 19

(2) INFORMATION FOR SEQ ID NO:54:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 22 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear
(ii) MOLECULE TYPE: DNA
(iii) HYPOTHETICAL: No

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:54:

TATTAGAGGT AGTAATTATG TT 22